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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,708	01/12/2004	Mark R. Fernald	WEAT/0553	9757
36735	7590	03/14/2006	EXAMINER	
PATTERSON & SHERIDAN, L.L.P. 3040 POST OAK BOULEVARD, SUITE 1500 HOUSTON, TX 77056			HUGHES, JAMES P	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/755,708	Applicant(s) FERNALD ET AL	
	Examiner James P. Hughes	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 7 and 8, filed December 31, 2005, with respect to the rejection(s) of claim(s) 1-30 under 35 USC 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as discussed below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 13 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Walters (6,033,515). Walters teaches a method and apparatus for fusion splicing of an optical fiber (e.g. a first waveguide section) and large optical device (e.g. a second waveguide section) which has a much larger cross section than standard optical fibers. Walters teaches that the two optical components (e.g. 16, and 14) are aligned along one axis and employing a split laser beam (e.g. the two laser beams 10) with an adjusted power level for such fusion splicing an optical fiber (14) to a large optical element (16) such as "a lens, filter, grating, prism, WDM device, or other such optical component to which it is desired to secure the optical fiber 14" (Col. 6, ll. 20-22). (See e.g. Col. 1, ll. 25-66, Col. 5, ll. 20 – Col. 6, ll. 25 and Fig. 1)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 13 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Chapman et al. (2003/0223712). Chapman et al. (2003/0223712) teaches a method and apparatus for placing two optical fibers in at least two stages wherein the stages allow movement of the fibers relative to each other: aligning distal ends of two optical fibers (12 and 14), then cleaving the end of an optical fiber (12) with a first laser (16), next cleaving the end of a second fiber (14) with a second laser (18), and following, fusing the two fibers together with a third laser (22). (See e.g., paragraphs 16-21 and Fig. 3) Chapman further teaches that the third laser beam (26) may be split into multiple component beams via a splitter device (79) to impinge on the two fibers, thereby forming a fusion splice. It is additionally taught that the laser power may be controlled by a feedback mechanism. (See e.g. paragraphs 16 - 25 and Fig. 3)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1-3, 6, 7, 9, 12-18, and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (2003/0223712) in view of Walters (6,033,515).

Chapman teaches a method and apparatus for splicing two optical fibers as discussed above. However, Chapman does not explicitly teach that at least one of the fibers has a diameter greater than 400 micrometers.

Walters teaches fusion splicing of fibers and large optical devices, which have a much larger cross section than standard optical fibers as discussed above.

Chapman teaches employing two laser sources for preparing an optical fiber for fusion splicing is advantageous because it allows a high reliability and control of the heat source (see e.g. p. 25). It would have been obvious to one of ordinary skill in the art at the time of invention to employ two beams to connect optical components – such as those with a 400 um and grater diameter – to each other as is taught by Walters in the method and device of Chapman to splice two larger (e.g. multimode) fibers or a single mode to a multimode fiber – e.g. optical waveguide sections with different and/or large cross-section diameters. One of ordinary skill in the art at the time of the invention would have been motivated to do so because the power output provided to the two fibers – of potentially different sizes – could be controlled more precisely, thus yielding an efficient splicing method and apparatus for large diameter waveguide sections.

5. Claims 1, 4, 5, 13, 20, 21, 27, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (2003/0223712) in view of Walters (6,033,515) in further view of Eskildsen et al. (2003/0108307).

Chapman et al. (2003/0223712) in view of Walters (6,033,515) teaches a method and apparatus for fusion splicing optical fibers as discussed above.

Eskildsen et al. (2003/0108307) teaches an apparatus and method for aligning two fibers for fusion splicing and subsequently evaluating the loss of the resulting splice. Eskildsen teaches that a power monitoring may be accomplished automatically by transmitting optical power through the fibers and detecting the power after traversing the fusion splice. Following, the detected power may be used as a feedback signal to adjust the lateral position of the fibers. (See e.g. p. 13) Eskildsen also teaches that the loss of the resulting spliced fiber may be measured via similar methods. (See e.g. p. 16) While Chapman in view of Walters in view of Eskildsen does not explicitly teach splicing fibers with reflective gratings, such fibers are commonly used in the art and could be incorporated in these inventions.

Chapman in view of Walters does not explicitly teach detecting light passing through a spliced region or the specific signal processing employed. It would have been obvious to one of ordinary skill in the art at the time of the invention to employ alignment and analysis systems and methods as taught by Eskildsen in the invention Chapman in view of Walters. One would have been motivated to make such a combination because it would yield an efficient means for fusion splicing optical fibers.

6. Claims 1, 8, 10, 11, 13, 19, 21, 26, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapman et al. (2003/0223712) in view of Walters (6,033,515) in further view of Huang et al. (2005/0117856). Chapman in view of Walters teaches a method and apparatus for fusion splicing optical fibers as discussed above.

Huang et al. (2005/0117856) teaches an apparatus and method of splicing optical fibers wherein mechanical and electrical shutters may control the exposure of laser light to a fusion splice region. Huang additionally teaches that a laser may be applied to the fibers so that the fiber ends become soft and are slightly deformed – thus forming a curvature. Huang teaches that this is beneficial for the fusion process. (See e.g. p. 28-37) Huang additionally teaches that visible laser beams may be employed in alignment of fibers in fusion splicing. (See e.g. p. 8)

Chapman in view of Walters does not explicitly teach employing a shutter device to control the laser. It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a shutter device because shutter device are commonly used in the laser art to control laser beams as, for example, taught by Huang in the invention of Chapman in view of Walters because this would allow controlled application of the laser beam. One would have been motivated to do so because it would yield an efficient method and device, for example it would provide protection from inadvertent exposure of the laser.

Chapman in view of Walters does not explicitly teach applying a laser to the fibers to provide a curvature to their distal ends. It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate the splicing techniques such as applying a laser to the fibers thus providing a curvature to their distal ends. One would have been motivated to do so because it would yield an efficient fusion splice.

Chapman in view of Walters does not explicitly teach employing a visible laser beam during alignment of the fiber splice. It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate an alignment system as taught by Huang, including

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splitting the visible beam, in the invention of Chapman in view of Walters. One would have been motivated to do so because it would yield an efficient manner for aligning the fibers.

Chapman in view of Walters does not explicitly teach employing a lathe in the fusion process. It would have been obvious to one of ordinary skill in the art at the time of invention to incorporate a lathe for rotating the fibers in the invention of Chapman in view of Walters. One would have been motivated to do so because it would yield an efficient manner for aligning the fibers; for example, it would allow uniform heating of the splice region.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wysocki et al. (5,299,274) teaches a similar invention of Walters et al. (6,033,515).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James P. Hughes whose telephone number is 571-272-2474. The examiner can normally be reached on Monday - Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James P. Hughes
Patent Examiner
Art Unit 2883



Frank G. Font
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